

CLAIMS

1. A system for connecting a first buoyant marine body to a second buoyant marine body in a side to side manner, said system comprising;

first male and female coupling members fixed respectively at the side of said first buoyant marine body and said second buoyant marine body

second male and female coupling members fixed respectively at the side of one or the other of said first and second marine bodies

said first male and female coupling members having an opposing relationship when the side of said first buoyant marine vessel is placed adjacent the side of said second buoyant marine vessel, the opposing relationship being such that as the first male and female coupling members are moved from an unengaged condition to a fully engaged condition by the movement of the first and second floating marine bodies towards each other in a first horizontal direction, the freedom of movement between the male coupling and the female coupling members, at least in the vertical direction, is decreases as they become vertically aligned

said second male and female coupling members having an opposing relationship when the side of said first buoyant marine body is placed adjacent the side of said second buoyant marine body, the opposing relationship being such that rigid coupling between said second male and female coupling members occurs, to prevent relative movement in at least the vertical direction, as the freedom of movement between the first male and female coupling members is or is proximate to being vertically aligned

the one or both of the first male and female coupling member being of a resiliently flexible nature

and securing means to be attached to said first and said second buoyant marine body to selectively prevent separation in said first horizontal direction of said first and second male and female coupling members.

2. A system as claimed in claim 1 wherein the first male and female coupling members when moved from an unengaged condition to a fully engaged condition by the movement of the first and second buoyant marine bodies towards each other, the freedom of movement of the first male coupling member within the female coupling member in a horizontal direction lateral to the first horizontal direction is also decreased.

3. A system as claimed in claims 1 or 2 wherein said first female coupling is a recess which includes an upper and lower substantially horizontally extending inwardly facing contact regions which define the limits of vertical movement of the first male coupling member as these are in a non-unengaged condition.

4. A system as claimed in claim 3 wherein the first male coupling member includes upper and lower substantially outwardly facing and horizontally extending contact regions, presented to engage with respective to upper and lower contact regions of the first female coupling member, said upper and lower regions of the first male coupling member, when viewed in a horizontal direction lateral to said first horizontal direction, becoming progressively more proximate to the upper and lower regions of said first female coupling member as the distance between said first and second buoyant bodies decreases.

5. A system as claimed in claim 4 wherein the upper and lower contact regions of the first male coupling member are defined by surface of a configuration such they are in simultaneous contact with the respective upper and lower contact regions of the first female coupling member when in the fully engaged condition.

6. A system as claimed in any one of claims 1 to 5 wherein the first male coupling member is of an exterior shape which, in a vertical cross section and substantially parallel to the first horizontal direction, is substantially "D" shaped with the base thereof positioned proximate most to said first buoyant body and extending substantially vertically.

7. A system as claimed in any one of claims 4 to 6 wherein the upper and lower regions of the first male coupling member with which the upper and lower regions of the first female coupling member are to respectively contact, is tapered (whether curved or linearly) when viewed in a horizontal direction laterally to the first horizontal direction, said taper being such as to decrease the vertical clearance between the first male coupling member and first female coupling pair as it approaches the fully engaged condition.

8. A system as claimed in any one of claims 1 to 7 wherein said first male coupling member includes lateral surfaces which are substantially vertical and angled relative to the first horizontal direction to define a tapered configuration of the first male coupling member when viewed in plan view, the larger width portion thereof being proximate most the first buoyant marine body.

9. A system as claimed in claims any one of 1 to 8 wherein the first female coupling includes two opposing lateral guide surfaces which extend substantially vertically and are angled relative to the first horizontal direction to define a tapered configuration with the mouth opening between said two opposing surfaces being wider than the base width between said two opposing surfaces.

10. A system as claimed in claims 8 or 9 wherein the lateral surfaces of the first male coupling member can be guided by the two opposing lateral guide surfaces when travelling from the unengaged condition to the fully engaged condition and to become both engaged with the two opposing lateral guide surfaces when in the fully engaged condition.

11. A system as claimed in claims any one of 1 to 8 wherein second male coupling member protrudes (in the first horizontal direction) less than and preferably less than half the distance from its respective first or second buoyant marine body than the distance that the first male coupling protrudes from the first buoyant marine body.

12. A system as claimed in claims any one of 1 to 8 wherein the depth (in the first horizontal direction) of extension of said second male coupling member into said second female coupling member is less than the depth (in the first horizontal direction) of extension of said first male coupling member into said first female coupling member.

13. A system as claimed in claim 12 wherein said first mentioned depth is less than half said second mentioned depth.

14. A system as claimed in claim 12 wherein said first mentioned depth is less than one third said second mentioned depth.

15. A system as claimed in claim 12 wherein said first mentioned depth is less than one quarter said second mentioned depth.

16. A system as claimed in any one of claims 1 to 15 wherein said the side of said first buoyant marine body at which said first male coupling member is positioned is the stern side thereof and the side of said second buoyant marine body at which said first female coupling member is positioned, is the bow side thereof.

17. A system as claimed in any one of claims 1 to 15 wherein said the side of said first buoyant marine body at which said first male coupling member is positioned is the port side thereof and the side of said second buoyant marine body at which said first female coupling member is positioned, is the starboard side thereof.

18. A system as claimed in any one of claims 1 to 15 wherein said the side of said first buoyant marine body at which said first male coupling member is positioned is the stern side or bow side thereof and the side of said second buoyant marine body at which said first female coupling member is positioned, is the port or starboard side thereof.

19. A system as claimed in any one of claims 1 to 18 wherein the sides of said first and second buoyant marine bodies are substantially straight sides (when viewed in plan view).

20. A system as claimed in any one of claims 1 to 19 wherein said first buoyant marine body has fixed thereto at least one first male coupling member and at least two of either said second male or female coupling members to at least one side thereof.

21. A system as claimed in claim 20 wherein said first buoyant marine body also includes a said first female coupling member to engage with a corresponding said first male coupling member of said second buoyant marine body.

22. A system as claimed in claim 21 wherein said first buoyant marine body has fixed thereto a pair of second male coupling members and a pair of second female coupling members to at least one side thereof.

23. A system as claimed in claim 22 wherein each of said pair are positioned at each end (horizontal) of a respective first male and female coupling members.

24. A system as claimed in any one of claims 1 to 23 wherein said buoyant marine bodies are barges.

25. A system as claimed in any one of claims 1 to 24 wherein said buoyant marine bodies are pontoons.

26. A buoyant marine body system for the creation of a flexible in configuration floating marine structure, said pontoon system comprising of a plurality of said pontoons each incorporating the system for securing as claimed in anyone of the preceding claims.

27. A system as claimed in claim 26 wherein the system for securing is identical for at least two of said pontoons of said pontoon system.

28. A system as claimed in claim 26 or 27 wherein the system for securing is identical for all of said pontoons of said pontoon system.

29. A system as claimed in any one of claims 26 to 28 wherein the system for securing is provided at the bow and stern sides of each pontoon of said pontoon system to allow for end on end engagement of at least two pontoons.

30. A coupling for connecting two buoyant marine bodies together in a side to side relationship, said coupling comprising

a first male coupling member fixed and protruding at the side of a first of said two buoyant marine bodies

a first female coupling member fixed at the side of a second of said two buoyant marine bodies said female coupling member being a horizontally extending channel having an opening through which said male coupling member can move to in a horizontal direction to become engaged therewith

said first male and female coupling members positioned to so that when in full engagement said first and second buoyant marine bodies are in a side by side relationship and relative vertical movement is limited by such engagement ,

a second male coupling member fixed and protruding at the side of one of said first or second of said two buoyant marine bodies

a second female coupling member fixed at the side of the other of said first or second of said two buoyant marine bodies to which said second male coupling member is fixed said second female coupling member being a recess having an opening via through which said male coupling member can move to in a horizontal direction once the first male and female coupling members approach a full engagement and to become engaged with each other to rigidly prevent movement relative to each other is at least a vertical direction,

the relationship between said first male and female coupling members being such that a graduated and reducing limitation in movement in the vertical direction occurs as the two buoyant marine bodies move closer to each other, as least one of said first male and female coupling members being of a resiliently flexible nature

and wherein fastening means are provided to hold said two buoyant marine bodies together when said first and second male and female coupling members are engaged.